Transactions of the Royal Society of South Africa

Publication details, including instructions for authors and subscription information:
http://www.tandfonline.com/loi/ttrs20

# PRELIMINARY NOTE ON THE ANCIENT HUMAN SKULL-REMAINS FROM THE TRANSVAAL.

S. H. Haughton [a], R. B. Thomson [a] & L. Péringuey [a]

[a] South African Museum

Version of record first published: 08 Apr 2010

To cite this article: S. H. Haughton, R. B. Thomson & L. Péringuey (1917): PRELIMINARY NOTE ON THE ANCIENT HUMAN SKULL-REMAINS FROM THE TRANSVAAL., Transactions of the Royal Society of South Africa, 6:1, 1-13

To link to this article: http://dx.doi.org/10.1080/00359191709520168

TRANSACTIONS

OF THE

ROYAL SOCIETY OF SOUTH AFRICA.

VOL. VI.



# PRELIMINARY NOTE ON THE ANCIENT HUMAN SKULL-REMAINS FROM THE TRANSVAAL.

By S. H. Haughton, Assistant Director, South African Museum.

With Notes Appended on Fragments of Limb-bones by R. B. Thomson, and Fragments of Stone by L. Péringuey, Director, South African Museum.

(With Plates I–X.)

(Read October 20, 1915.)

Towards the end of the year 1913 Mr. F. W. FitzSimons, of the Port Elizabeth Museum, was shown the portion of the skull-cap herein described which had been unearthed in making an underground drain on the farm Kolonies Plaats, Boskop, in the Potchefstroom district of the Transvaal. He recognised it as a human relic, and proceeded to make further excavations on the site. A year later further excavations were made by officers of the South African Museum and the Port Elizabeth Museum aided by a grant from the Royal Society of South Africa, but the results obtained were very poor. The remains found consist of a large portion of a calvaria, the horizontal portion of the left ramus of the mandible, the major portion of a temporal bone, and some fragmentary limb-bones. It is intended that these remains shall be described more fully later; but in view of notices of a misleading character which have already appeared in print, it has been thought advisable to publish a preliminary note with a few details. For permission to do this, I have to thank Dr. Péringuey, the Director of the South African Museum, to whom the remains were originally sent for investigation and report.

*Occurrence.*—The portion of the farm on which the remains were discovered consists of a cultivated field lying on the east (left) bank of the

Mooi River, between the river and the house of Mr. Piet Botha. At the time of my visit the ground from which the skull-cap was unearthed had been dug over at least twice, so that it was difficult to determine exactly the original position of the fragment. Moreover, although further excavations were carried out, no bones were found *in situ*, the only pieces discovered being fragmentary parts of a femur which were scattered through the upper 18 inches of re-interred débris. As far as I could discover, however, the skull-cap was found at an approximate depth of 4 feet 6 inches below the level of the ground, but no direct evidence was forthcoming to show whether the remains had been interred by human agency or naturally—*i. e.*, whether or not the body had lain in a grave.

The spot from which the skull came lies 242 feet from the river bank, measured at right angles to the bank. The level of the surface above it stands 10 feet 9 inches above the present bank of the river, and 16 feet 9 inches above the bed at the middle of the stream. The flood-plain of the river rises 6 feet in 54 feet, and then slopes more gradually upwards to the spot where the remains were unearthed.

Excavations were carried on to a depth of nearly 8 feet over an area of about 25 square yards around the spot which was pointed out as being directly over the original position of the skull-cap. In the centre of this area previous excavations and infillings had caused an intermingling of the soil and subsoil, in which mixture—as stated above—the fragmentary femoral remains were discovered. An undisturbed section showed: Soil, 1 ft.; subsoil, 4 ft. 3 in.; breccia ("ouklip"), 2 ft. 9in., as far as the section was taken.

The soil was a fairly dark rich soil which had been cultivated for a number of years. It gradually gave place to the subsoil which, in turn, graduated into the lateritic "ouklip" breccia. The subsoil contained in its upper part a few scattered irregular lumps of breccia, but as it was traced downwards these masses became more plentiful until ultimately the loose material was replaced entirely by a stiff breccia. At the 4 ft. 6 in. level the lumps of breccia were fairly plentiful, and the whole of the front of the skull-cap, most of one side, and all the inner surface were encased in a matrix of this material.

The lateritic breccia consists of small pebbles and pellets of chert and sandstone set in a ferruginous and occasionally siliceous matrix, with here and there a few small, irregular, drusy cavities. The thickness of this laterite is not known, as excavations in it could not be conducted to a greater total depth than 8 feet, owing to the flooding of the hole by underground water.

At a depth of 5 feet one or two larger fragments of sandstone with angular borders were found partially encased in laterite, and have been submitted to Dr. Péringuey for an opinion as to their possible shaping by human agency.

Of the rate of formation of this laterite nothing is known. The conversion of soil into laterite takes place presumably from below, as the upper parts of the section show but isolated patches of the rock. The skull-cap must have been lying there long enough for part of its surrounding soil to become lateritised and for the formation of masses of the breccia in at least 3 ft. 6 in. of ground above it; but it would seem impossible to assign to it any definite age in the absence of knowledge of the time required for cementing to take place under the local conditions.

A microscopic study of a portion of the parietal bone shows that the large vessels and vacuities in the cancellous tissue or diploe are almost completely filled by crystalline calcite. Around each of them is a more or less irregular dark brown ring of oxide of iron, smaller particles of which are scattered through the ground-mass. The ground-mass of the bone consists of calcite and calcium phosphate, the former apparently predominating.

The weight of the skull-fragment, omitting a small piece of the right parietal and the temporal bone, when cleared of matrix, was 698 grm.

The following report upon the composition of the remnant was kindly submitted by Dr. C. F. Juritz, the Government Analyst, the analysis being carried out by Dr. W. Versfeld:

"*Analytical Results.*

| | |
|---|---|
| "Silica | 3·0 per cent. |
| Oxide of iron | 2·9 „ |
| Lime | 44·1 „ |
| Phosphoric oxide | 12·0 „ |

"The sample loses about a third of its weight on ignition. This represents moisture and carbon dioxide. The latter appears to have replaced phosphoric oxide to a large extent.

"The specific gravity of the whole piece is 2·08. When powdered it should be slightly higher.

"The theoretical composition of calcium phosphate, of which human bones largely consist, is:

| | |
|---|---|
| Lime | 54 per cent. |
| Phosphoric oxide | 46 „ |

and that of carbonate of lime is:

| | |
|---|---|
| Lime | 44 per cent. |
| Carbon dioxide | 56 „ „ |

*Skull-cap.*—The calvaria, as preserved, probably presents its maximum length, which is about 205 mm.; and a slight restoration of one side of the fragment where the bone-surface has been worn away gives a maximum breadth of 154 mm. The cephalic index $\left(\frac{\text{greatest breadth}}{\text{greatest length}} \times 100\right)$ is thus

75·1 at its minimum value—*i. e.* supposing that there has been no decrease in the width due to crushing and that the length preserved is the maximum. The skull is thus slightly mesaticephalic, almost dolichocephalic. The cranial capacity must have been very large. In order to obtain the basilo-bregmatic height I have placed the temporal bone in what I conceive to be its highest possible position, and so obtain a height of 140 mm. Even supposing this height to be 10 mm. too great, which must be the maximum of error possible, the calculation of the capacity by Broca's method gives the minimum figure as 1832 c.c. This is obtained by dividing half the product of the antero-posterior diameter, the maximum transverse diameter, and the vertical basilo-bregmatic height by the cubic index of Broca (1·12). In this connection it must be noted that the skull wall is very thick and that the bi-stephanic width is small, so that some reduction of this figure is necessary. As, however, both the height and width of the skull are greater than those of the Cro-Magnon man, and the auricular height is probably equally as great, the brain capacity of the Boskop skull must have been at least as great as that of Cro-Magnon, which is given as roughly 1660 c.cs., and was probably somewhat greater.

The forehead, at first, rises almost vertically above the moderate supra-orbital ridges, and then bends back abruptly. The bend is not so abrupt as in the Cro-Magnon man, and it continues along the median line in a regular sweep almost to the posterior third of the parietal. The top of the skull is somewhat flattened in the manner of that of the Cro-Magnon man. In the *norma lateralis* the flattening appears to be greater than it really is along the median line because of the parietal bosses, which rise up on either side of a central concave depression which runs along the median suture. This feature of the skull is a very pronounced one; it is not paralleled in any skull in the possession of the South African Museum, although, according to M. Boule, it has been seen on some Negro skulls and also upon a Namaqua skull now in the Paris Museum. At the level of the posterior part of the parietal there is a decided flattening, which continues on to the superior part of the occipital bone. The occipital projects strongly, and has a strong ridge bifurcating downwards and outwards parallel with the lambdoid sutures from a point 14 mm. below the lambda. In *norma occipitalis* the skull is remarkable for its breadth, its flattening, and the central depression.

The general characters of the calvaria already mentioned agree closely with those of the Cro-Magnon type: the general nature of the antero-posterior curve, the vertical forehead, the parietal flattening in the posterior part, and the strong occipital protuberance are seen in both. It is in the presence of the median depression and in the *norma verticalis* that the chief differences are seen.

In *norma verticalis* the skull of La Grotte des Enfants displays scarcely anything of the parietal bosses; that of the Cro-Magnon man (No. 1) affects

somewhat a pentagonal outline. In our form the pentagonal shape of the outline is more pronounced, and just in front of the large, rounded, parietal bosses the sides of the pentagon are even slightly concave. It is, therefore, in the frontal diameter that our skull gives figures less than those of the Cro-Magnon type. The general similarity is well seen in the following table, which compares the Boskop skull with the male and female skulls of Cro-Magnon and with the large male skull of La Grotte des Enfants.

| (All measurements in mm.) | Boskop. | Cro-Magnon Type. Cro-Magnon. ♂ | Cro-Magnon. ♀ | La Grotte des Enfants. ♂ |
|---|---|---|---|---|
| Max. Antero-Posterior Diam. | 205 | 202 | 191 | 198 |
| Transverse Diameter, probably 154 | — | 149 | 140? | 151? |
| Max. Frontal Diameter | 120 | 125 | 119 | 127 |
| Min. Frontal Diameter | 103? | 103 | 98 | 103 |
| Total Horiz. Curve nearly 580 | — | 568 | 535? | 560 |
| Pre-auricular Horiz. Curve. | 280? | 272 | 240? | 269 |
| Sur-auricular Curve about 340 | — | 330 | 300? | 323 |
| Parietal Curve | 139 | 133? | — | 133 |
| Cephalic Index | 75·1 | 73·76 | 73·29? | 76·26 |
| Frontal Index | 66·9 | 69·1 | 70? | 68·2 |

It will be seen that the cephalic index lies well within the limits of variation in the Cro-Magnon type (71·36 to 76·27), although it is somewhat greater than the mean for that type (73·67).

Although the frontal is not quite complete, the supra-orbital features appear to have been very similar to those of the Cro-Magnon man. The glabella was in relief, and the supraciliary ridges—although strong in all probability in their internal parts—die out on the outer portion, while the external auditory apophyses project considerably outwards.

Of the face nothing remains.

Having drawn attention to the many points of resemblance to, and the few of difference from, the general characters of the calvaria of the Cro-Magnon type, it has been thought advisable to give some fuller descriptions of the several bones.

*Frontal Bone.*—In *norma facialis* the forehead seems very narrow, and a posthumous deformation has increased slightly the prominence of the frontal eminences, especially that of the right side. The external angular process, as mentioned above, is very prominent.

On the posterior surface the frontal fossae are well-marked and deep. But the outstanding feature of the posterior surface is the length and prominence of the central ridge, the "crista frontis." This extends for a distance of at least 45 mm. above the foramen caecum, and at its lower part

had a depth of about 10 mm. It is not placed symmetrically in the skull as preserved, the right frontal fossa being considerably wider and larger than the left because of the oblique direction which the crista frontis follows.

Of the orbital plates only the outer portion of the right plate is preserved. This has been slightly bent downwards and forwards posthumously so that the orbit appears to have a less volume than the true one.

The total length of the frontal curve was probably nearly 150 mm. As pointed out previously, it is in the width across the forehead and in the straight —even slightly concave—sides of the frontals as seen in *norma verticalis* that the calvaria differs from the Cro-Magnon type.

*Temporal Bone.*—The right temporal bone is preserved, lacking the upper part of the squamous wing which articulates with the parietal.

The mastoid apophysis is feebly developed as in the man of La Chapelle-aux-Saints, but is well detached and projects outwards. The posterior border is peculiar in that it is excavated above, so that the upper half of the digastric groove is fully exposed in *norma lateralis*. In the Cro-Magnon type the mastoid process is more fully developed.

The auriculo-mastoidean height is between 27 mm. and 28 mm. This is greater than that of the man of La Chapelle, but less than the minimum observed in modern races, and less than that of the type of Cro-Magnon.

The digastric groove is straight and very deep—deeper, wider, and more horizontal than in the skull of La Chapelle. The petrous region is well developed.

The glenoid cavity is shallow and comparatively wide, both the articular eminence and the post-glenoid process being of low inclination, although the latter is very clearly defined. The cavity is by no means as wide as that of the La Chapelle skull. In the Cro-Magnon skull (No. 1) the cavity is very much deeper, and the post-glenoid process is very much stronger and of steeper inclination.

Perhaps the most striking feature of the bone is the length and strength of the supra-mastoid ridge. Above the external auditory meatus it is low, but behind this it becomes much stronger, and is still broad and well-marked at the suture with the parietal.

A study of this bone, then, leads to results which seem to be somewhat inconsistent with those obtained from the skull-cap alone. All its features seem to point to a pithecoid morphology comparable with that of *Homo neanderthalensis* as exhibited in the skull of La Chapelle, while the skull-cap is comparable with the Negroid and Bantu types. The smallness of the mastoid process may point to the remnant being that of a female, but such an explanation is insufficient to account for all its features; for example, the strength of the supra-mastoid ridge is insisted upon by several writers as being one of the characteristics of a degraded type of skull.

Although the temporal bone is not actually in continuation with the calvaria, an approximately exact position for it can be obtained from the use of a cast of the skull taken before development. Placing the temporal in the most anterior position possible, and doubling the half of the pre-auricular curve thus obtained, we get a minimum figure for the horizontal pre-auricular curve of nearly 280 mm. This places the auditory meatus as far from the front of the skull as in the Cro-Magnon skull and the large skull of La Grotte des Enfants. Similarly, taking into due account the probable amount missing from the squamous wings of the parietal and temporal, we obtain a total sur-auricular curve of approximately 340 mm., a number which also bears comparison with those of the various Cro-Magnon skulls.

*Parietal Bone.*—The nature of the parietal bosses and of the very striking median depression between them have already been indicated. The parietal length is about 139 mm., somewhat greater than that of the Cro-Magnon man. The median depression is broadest at the level of the parietal foramina and disappears at the top of the skull and at the lambda.

Most of the temporal ridge is missing, but on the remaining part of the parietal it is not well-marked. The bone is thick. Near the posterior inferior angle it has a thickness of 7 mm., at the parietal boss one of 13–14 mm., and at the obelion one of 10·5 mm. The lower border is not present.

A study of the figures of various median profiles given will bring out more clearly the relations of this skull to those of other known groups with which it might be thought to have affinity. Owing to the fragmentary nature of the remains it has been impossible to use the Frankfort base-line for comparison, or even the line glabella-inion. The line glabella-lambda, however, which has been taken, gives fairly satisfactory results, especially as it is possible to continue the profile of the skull beyond the lambda. It can be seen that, although the parietal part of the skull in its slope has some affinity with the Neanderthal type, any real resemblance between the two is non-existent. The Boskop skull shows none of the flattening of the top of the cranium, none of the retreating forehead, and nothing of the tremendous brow-ridges which are all such striking characteristics of the Neanderthal type.

The greatest amount of similarity is shown to the Bantu type and to the Cro-Magnon type. The shape of the forehead and of the front half of the head is almost paralleled in a number of Bantu skulls, of which the median profiles of two are presented. In no Bantu skull in the South African Museum collection, however, is there the degree of flattening and elongation of the posterior portion such as is seen in the Boskop skull. This feature is paralleled by the Cro-Magnon type which, save that it has a

slightly smaller basilo-bregmatic height, follows closely this new skull in general features. Now, the Cro-Magnon man is a prehistoric type of undoubted Negroid affinities, and it is possible that in the Boskop man we have a member of a race which ultimately developed into the Bantu type.

*Mandible.*—The left horizontal ramus is preserved almost entirely, together with a somewhat incomplete second molar. The ramus is low The greatest height near the symphysis is 27 mm., and its greatest thickness at the same spot is about 13·2 mm., so that its "indice de robusticité" is about 50, a number greater than that of modern man and slightly less than that of the man of La Chapelle.

The anterior face of the ramus reaches almost to the symphysis, and shows a slight, somewhat triangular symphysial ridge in the lower half. The alveolar border has been rubbed away to a certain extent on the front face, but it seems probable that there was a slight chin. The foramen mentale appears to be nearer the upper border of the ramus than it is to the lower; but resorption of the alveolar border has gone on to a large extent, so that the alveolus for the first molar has been totally filled with bone.

Owing to resorption, the upper external border of the ramus from the first pre-molar backwards coincides with the external oblique line. In the canine region the upper part of the outer surface has been worn away slightly.

The posterior face of the ramus is not preserved quite to the symphysis. At the broken inner edge, about 8 mm. below the upper border, is seen a depression representing the left vascular foramen. Below this the surface is slightly concave for a short distance, and then swells to form the transverse convex protuberance which continues into the inconspicuous mylohyoid ridge. Below this is seen the outer half of the oval, elongate digastric fossa. The digastric fossa appears more on the posterior and less on the inferior surface than in the La Chapelle jaw, and was comparatively small.

The alveolus for the first incisor is missing; that of the second incisor (represented by its outer portion) is small. That for the first premolar is enlarged into a roughly circular hole with a diameter of 9 mm. Portion of the alveolus of the second premolar is preserved.

The length of jaw in front of the molars—measured along the border—was about 33 or 34 mm. The first molar is, however, missing, and its alveolus is completely filled with bone. Radiographs of the jaw fail to show any tooth fragments still remaining in the bone. The premolar length cannot be absolutely determined, but it was essentially human.

The second molar is partly preserved, together with the anterior part of the alveolus of the third molar. The total molar length was about 31 mm.—a length comparable with that of the modern European and considerably less than that of the Grimaldi type, or even of the Australian.

The second molar measures 10·5 mm. in length, and has a maximum width of 9·5 mm. Its crown is not complete, but, as far as can be seen, it shows no trace of a posterior denticle such as appears in several primitive types. The second external denticle is large.

The great length of the tooth compared with its width is a point of interest, even if some slight addition to the width given be made because of possible loss. In Bantu jaws in the Museum collection which possess the second molar the width is either equal to, or slightly greater than, the length, save in one instance, in which the tooth is 10·3 mm. long and 10·15 mm. wide. In jaws of the Bush race the length and width of this tooth are approximately equal. In a semi-fossilised fragment of jaw from Harrismith, recently discovered by Dr. T. F. Dreyer, and by whom permission has been granted for an examination to be made, the second lower molar is broken off at the alveolar border, where it has a length of 8·4 mm. and a similar width across the anterior portion. This jaw is rather striking, in that the width anteriorly is much greater than the posterior width, the anterior roots being strongly developed in a somewhat greater degree than is seen in other jaws of the Bush type, with which it seems to have most affinity. In the Boskop jaw, however, there is apparently no such great development of the anterior roots.

One noticeable feature of the fragment is the thickness of the hinder part of the horizontal ramus. At the back of the second premolar it begins to thicken appreciably, so that at the level of the front of the second molar it is 18 mm. thick, and at the front of the third molar about 21·5 mm. A portion of this latter must be subtracted as a correction for displacement of the outer surface. In the Grimaldi male skull the thickness at the second molar is 19 mm., a figure which M. Verneau points out is rarely met with even on the thick mandibles of the Neanderthal race. A Caucasian lower jaw in the possession of the South African Museum has a thickness of 19 mm. at the second molar; but it is an extremely massive example, and possesses a thickness of 16·5 mm. at the foramen mentale, whereas the Boskop jaw only gives 14·5 mm. at the same point.

It has been possible to gain a very nearly perfect idea of the shape of the jaw, which is striking on account of its obtuseness. Comparison with other jaws shows that the jaw is shortened nearly as much as in the average European of to-day. The jaw of the Grimaldi man is long and the arcade narrow; in the Australian the arcade is more open, and there is a gradual widening of the jaws as we trace them through the Bushman and Bantu to the European. Simultaneously with the shortening of the alveolar border and the widening of the arcade there is a thrusting forward of the chin. The development of the chin in the Boskop jaw—although a matter open to dispute—seems to be approximately equal to that in the normal Bushman type, and somewhat inferior to that of the Bantu.

Study of the various fragments found, therefore, seems to lead to somewhat diverse results. The temporal bone displays undoubtedly primitive features; the skull-cap seems closest in point of size and general characters to the Cro-Magnon type; the mandible appears to be in a slightly more advanced stage of evolution, and to be comparable on the whole to the Bantu.

## Note upon the Fragments of the Limb-bones of the Boskop Remains.

By R. B. Thomson.

The portions of the Boskop skeleton, other than those of the skull, have been submitted to me by Dr. Péringuey of the South African Museum for a preliminary report.

The fragments, as far as I can determine, consist of two portions of the femoral shaft, one part of each left tibia and fibula, and one part of each left radius and ulna, these latter four being in close relation to each other in a mass of what appears to be ferruginous laterite. All the fragments are petrified to a large extent. Inspection under X rays has been of some help since certain exposed portions of the bones are more opaque than the adjacent laterite.

The upper fragment of the femur, which is possibly of the right side, is a portion of the shaft 131 mm. long, with a maximum breadth of 36 mm. The anterior and lateral faces are fairly intact, but the medial and posterior aspects are absent. Its condition is such that it is difficult to state not only to which part of the proximal three-quarters of a femoral diaphysis it may be apportioned, but also to which side of the body it may belong.

The lower fragment of the femur belongs to the distal third of the right femoral diaphysis. It is 98 mm. long, with a greatest breadth of 46 mm. at its distal end. All the faces of this portion are pretty complete, the posterior one—planum popliteum—being the best preserved of all. Both epicondylic lines are distinct.

The portions of the tibia and fibula are from the distal thirds of the diaphyses. The length of the tibial fragment is 90 mm. and that of the fibula 56 mm.

The radius and ulna are both represented by considerable portions of the shafts, that of the ulna being represented from about a point midway between the coronoid process and the position of the nutrient foramen to a point roughly about 25 mm. (1 in.) short of the distal end. It measures 155 mm. long. The radial shaft is more complete, is 188 mm. long, and embraces that portion from the region of the lower part of the neck to a point well towards the distal extremity.

The position of the fragments of the bones of the forearm and of the leg to each other is worthy of attention. The radius and ulna cross the medial side of the tibia at an angle of about 30 degrees, the point of crossing being about the level of the nutrient foramina of the two forearm bones. This would appear to indicate that the position of the body after death has been an acutely flexed one of the lower limbs, with the left forearm lying in a supine position on the medial side of, and crossing the left leg.

The positions of the parts of the thigh-bone or of the skull to the remainder I have not been able to ascertain. The position of the radius to the ulna would appear to be such that both bones have been rotated and approximated by pressure, so that the interosseous crests are directed forwards and prevent at present an estimation of the interosseous interval.

*Radius.*—The degree of development of this bone cannot be described as robust, neither is there any marked curvature of the shaft. The index of the diaphysis taken just below the level of the insertion of the pronator teres muscle is 76·6, the greatest transverse diameter being 15 mm., and the greatest antero-posterior 11·5 mm.

For comparison the index of the La Chapelle aux Saints radius is stated by Boule to be 75, while Fisher gives a range of 61·5 to 90·9 for recent man (*Annales de Paléontologie*, tome vii, fasciculi 3 and 4, p. 131). The position of the tuberosity is at present difficult to define. It would appear, however, to be situate more on the medial side of the junction of the neck and corpus than on the anterior face. The interosseous ridge may be continuous with it. This ridge is the only margin of the bone well defined.

*Ulna.*—The portion of the shaft represented is not strongly developed and is triangular on cross-section. The proximal end does not show any definite sign of flattening—platôlenie de Verneau. The distal end requires more definite isolation from the laterite before an opinion as to the amount of curvature can be definitely expressed.

*Tibia.*—This fragment would appear to be a segment of a fairly stout tibia, and shows a resemblance to the corresponding part of a cast of the tibia of *Homo mousteriensis*. It is definitely triangular on section with the usual large amount of compact tissue at this level. There is little evidence of platycnemia. Platycnemia when present affects to a more or less degree the greater part of the shaft of a tibia. I have endeavoured to obtain a platycnemic index of the fragment of this Boskop tibia belonging, as before mentioned, to the distal third of the shaft by comparing it with other tibiae at approximately the same level.

TABLE 1.—PLATYCNEMIC INDEX ESTIMATED AT USUAL SITE—VIZ. THE LEVEL OF THE NUTRIENT FORAMEN.

| | Antero-posterior diameter. | Transverse diameter. | Index. |
|---|---|---|---|
| Cast of *Homo mousteriensis* | 32 ? | 28 ? | 87·5 |
| 1 European tibia | 38 | 28 | 73·7 |
| 1 S.A. Bush | 28 | 19 | 67·9 |
| 1 markedly flattened tibia from sand-dunes, Gullane, N.B. | 36 | 21 | 58·3 |

TABLE 2.—PLATYCNEMIC INDEX OF THE SAME BONES ESTIMATED AT APPROXIMATELY THE SAME LEVEL IN THE DISTAL THIRD OF THE SHAFT.

| | Antero-posterior diameter. | Transverse diameter. | Index. |
|---|---|---|---|
| Cast of *Homo mousteriensis* | 24 | 24 | 100 |
| 1 European tibia | 26 | 25 | 96·1 |
| 1 S.A. Bush | 21 | 18 | 85·7 |
| 1 Gullane tibia | 27 | 22 | 81·5 |

The index of the Boskop tibia at approximately the same level as in Table 2 is 96·5, the antero-posterior diameter being 28 mm. and the transverse diameter 27 mm.

*Fibula.*—The fragment of the fibula is characterised by a large antero-posterior diameter 17 mm.

*Femur.*—From the proximal fragment it is only possible to deduce that the antero-posterior curvature of the shaft has been well marked. There is no trace of the linea aspera, hence an opinion as to *pilastré* cannot be formed. I am not able to state whether superior platymeria is present or not.

The distal fragment shows a distinct flattening, platymeria inferior, of the shaft from before backwards. This portion is from the shaft above the region of the patellar fossa, which has been observed in primitive femora. The anterior face shows on its lateral side the faint, rounded ridge which runs proximally from the lateral side of the patellar facet. The posterior face—planum popliteum—is the best marked part of this fragment. About 72 mm. of this surface is represented bounded by distinct epicondylic lines. The planum popliteum presents one special character—viz. it is full and convex.

The exact site for a popliteal index—*i. e.* 4 cm. above the articular surface of the lower extremity—cannot until after reconstruction be ascertained. I have, however, endeavoured roughly to compare the dimensions of this part of the shaft of the Boskop femur by placing the fragment side by side with casts of the Neanderthal and Spy femora. It is possible, as it were, to fit the Boskop fragment into the diaphyses of these, and then measure the diameters at approximately the same levels.

| | Antero-posterior diameter. | Transverse diameter. | Index. |
|---|---|---|---|
| Neanderthal cast | 30 | 40 | 75 |
| Spy cast | 32 | 43 | 74·41 |
| Boskop femur | 28 | 44 | 63·63 |

The photographs appended have been prepared under the direction of Dr. Péringuey. In order that the fragments may stand out from the laterite, these have been lightly touched with white paint.

## Note on Fragments of Stone found in Excavating for the Boskop Remains.

By L. Péringuey, D.Sc., Director S. African Museum.

Mr. Haughton brought back a few fragments of sandstone with angular borders found partially encased in laterite in the excavation carried to a depth of nearly 8 feet over an area of about 25 square yards around the spot which was pointed out to him as being directly over the original position of the skull-cap of the Boskop man.

A superficial examination was sufficient to reject most specimens as not being artefacts. Two which were thickly coated with the ferruginous matrix, with ends only partly showing, were very carefully developed, with the result that I can ascribe to them nothing but a natural origin. Man's hand had no share in the shaping.

One of these pseudo implements has truly a facies approximating to that of an artefact; but if shaped by man, the median ridge of the upper face should be sharp, whereas it is rounded and not continuous in the original. This is the only piece that might be taken as simulating a long flake, but it is an accidental simulation.

However much I regret that no lithological evidence is forthcoming in connection with the find of the Boskop man, I find it impossible to consider any of the fragments of stone found in the breccia as being artefacts.

# EXPLANATION OF PLATES.

## PLATE I.

FIG.

1. Boskop skull-cap. Norma lateralis × 0·67.
2. Boskop skull-cap. Norma occipitalis × 0·67.

## PLATE II.

1. Boskop skull-cap. Norma verticalis × 0·6
2. Boskop skull. Temporal bone. Outer view ×

## PLATE III.

1. Boskop lower jaw. View of left ramus from above × 1.
2. Boskop lower jaw. Side view of left ramus × 1.
3. Lower jaw from Harrismith, O.F.S. View from above × 1.
4. Lower jaw from Harrismith, O.F.S. Lateral view × 1.

## PLATES IV.–VII.

Diagrams showing comparison of Boskop skull-cap with skulls of other known types by drawings of the median profiles of various skulls on the line drawn from the ophryon to the lambda. All the figures are drawn to natural size. Plate IV. Comparison with Neanderthal type. Plate V. Comparison with Cro-Magnon type. Plate VI. Comparison with Bantu type. Plate VII. Comparison with Bush-Strandlooper-Hottentot types.

## PLATE VIII.

Portions of limb-bones of Boskop skeleton.

1. Portions of tibia, fibula, radius, and ulna in a mass of laterite. The part of the ulna is not yet exposed × 0·8.
2. Cross-sections of the shafts of the radius and ulna at the level of the insertion of the pronator teres muscle × 1.
3. Portions of tibia and fibula, anterior aspect × 1.

## PLATE IX.

4. Large part of the laterite removed, exposing the portions of the tibia, fibula, radius, and ulna × 0·8.
5. Portion of femur from proximal three-fourths of shaft; anterior aspect × 1.

## PLATE X.

6. Portion of femur as in Fig. 5. Side aspect to show curvature of shaft × 1.
7. Portion of right femur from distal part of shaft, anterior aspect × 1.
8. Portion of femur as in Fig. 7. Medial aspect, showing fulness of planum popliteum × 1.

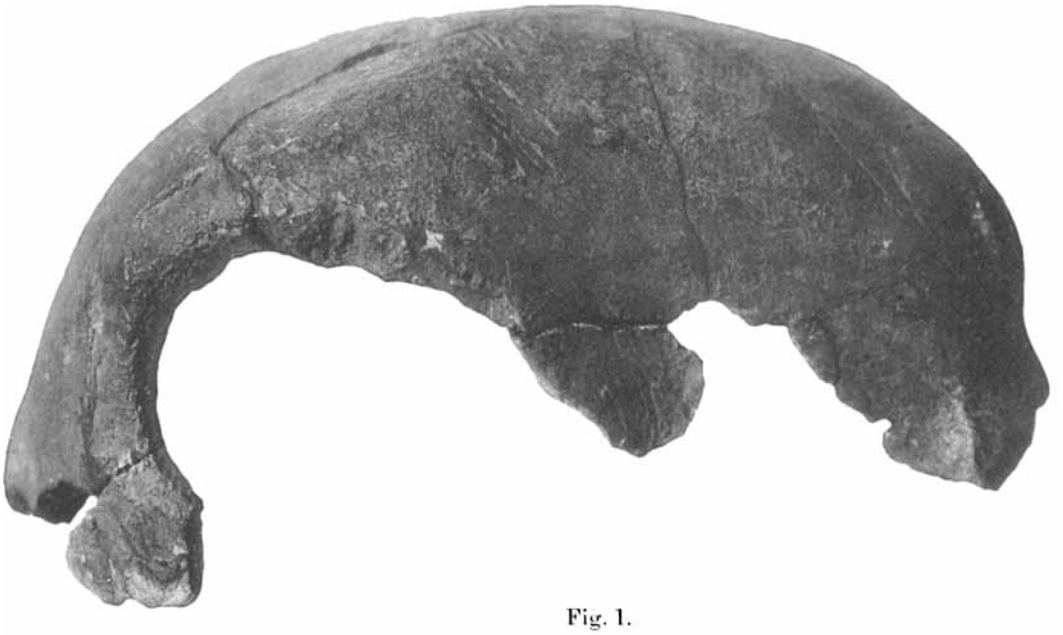


Fig. 1.

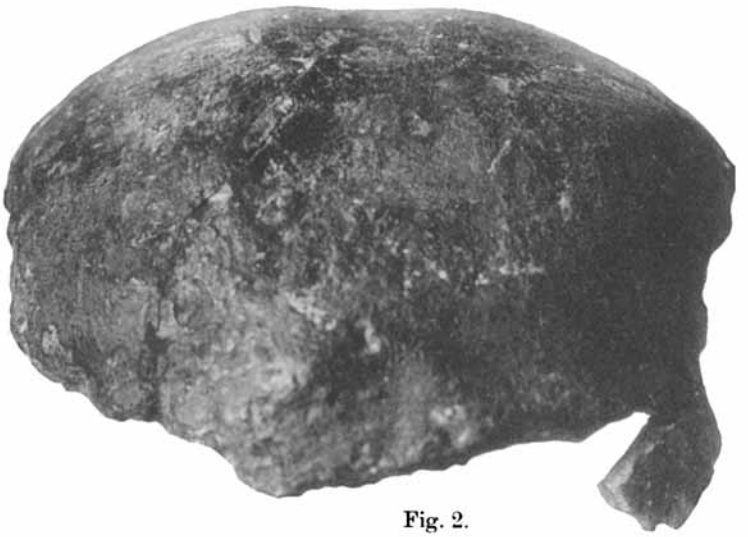


Fig. 2.

*Adlard & West Newman.*

Fig. 3.

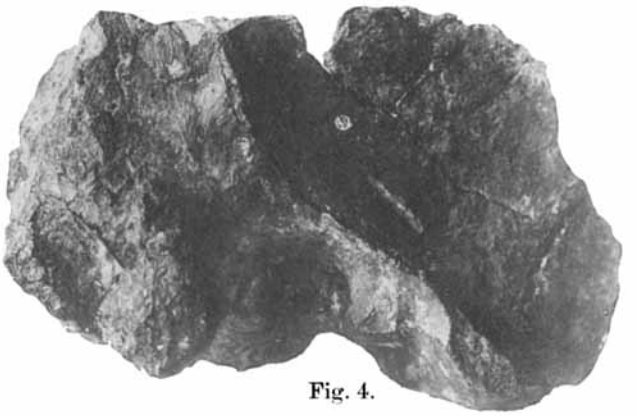


Fig. 4.

*Adlard & West Newman.*

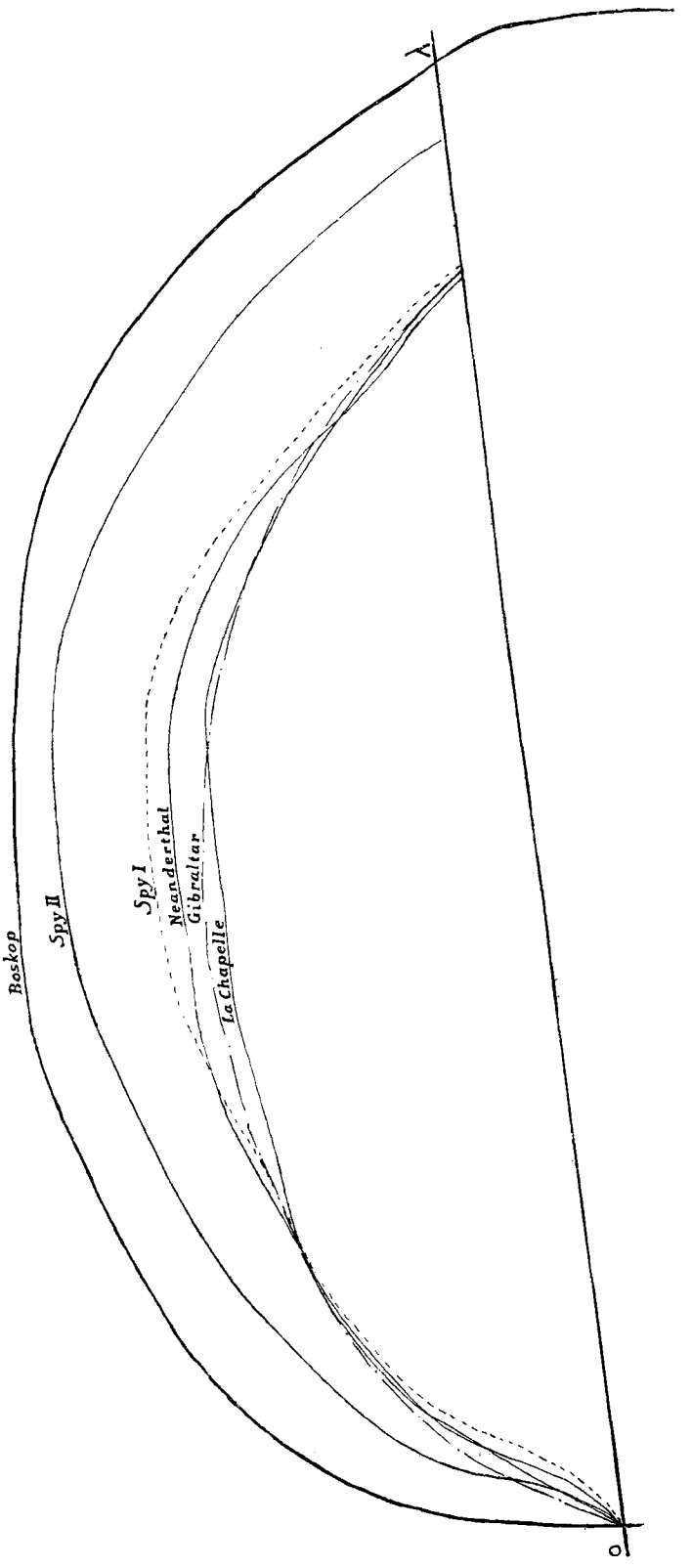
Fig. 1.

Fig. 2.

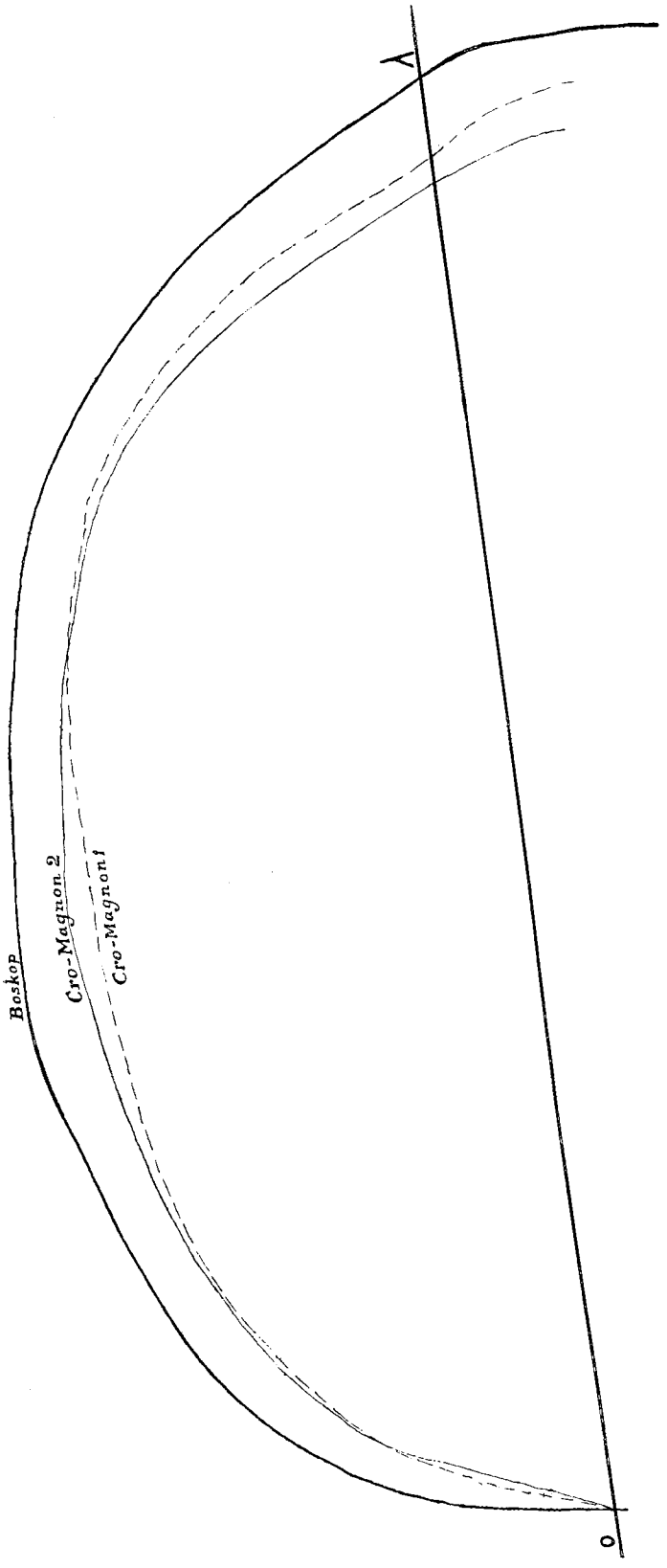
Fig. 4.

Fig. 3.

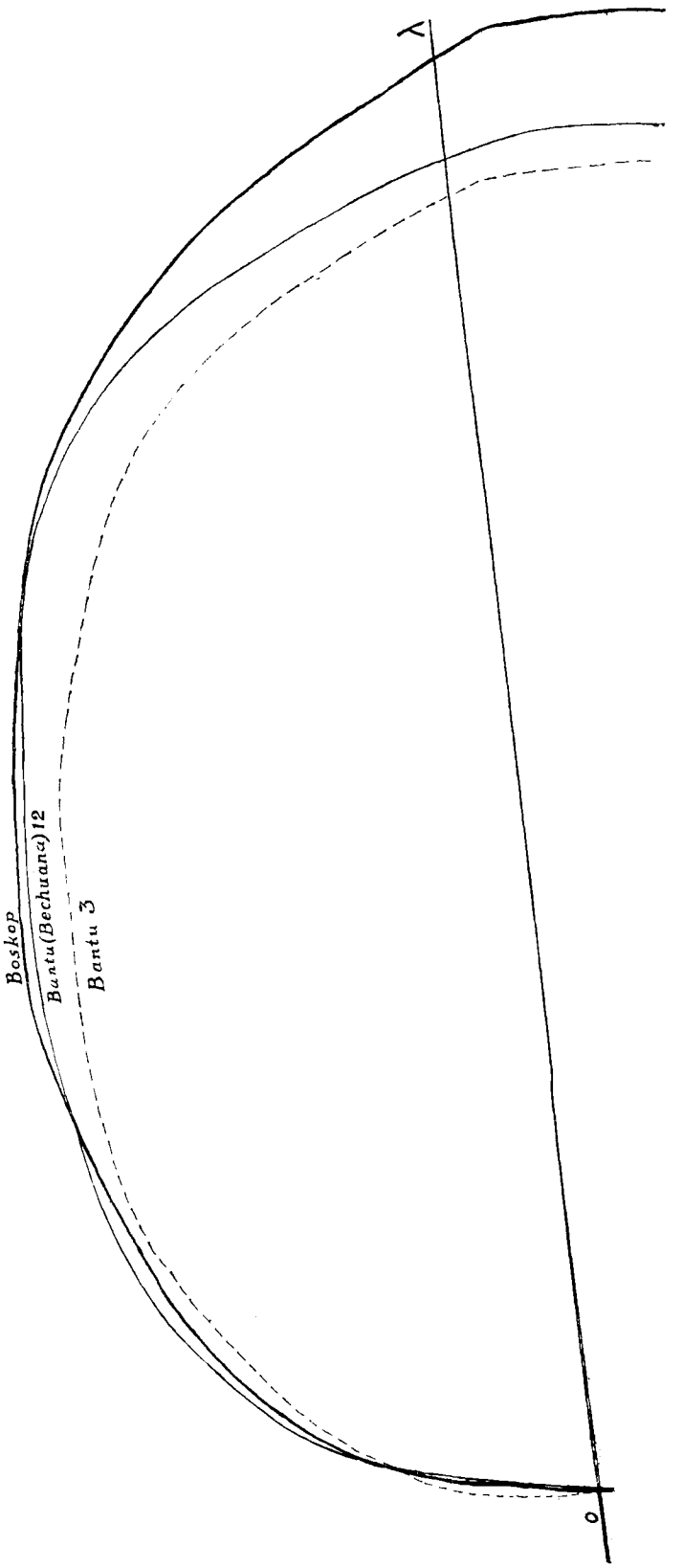
Adlard & West Newman.



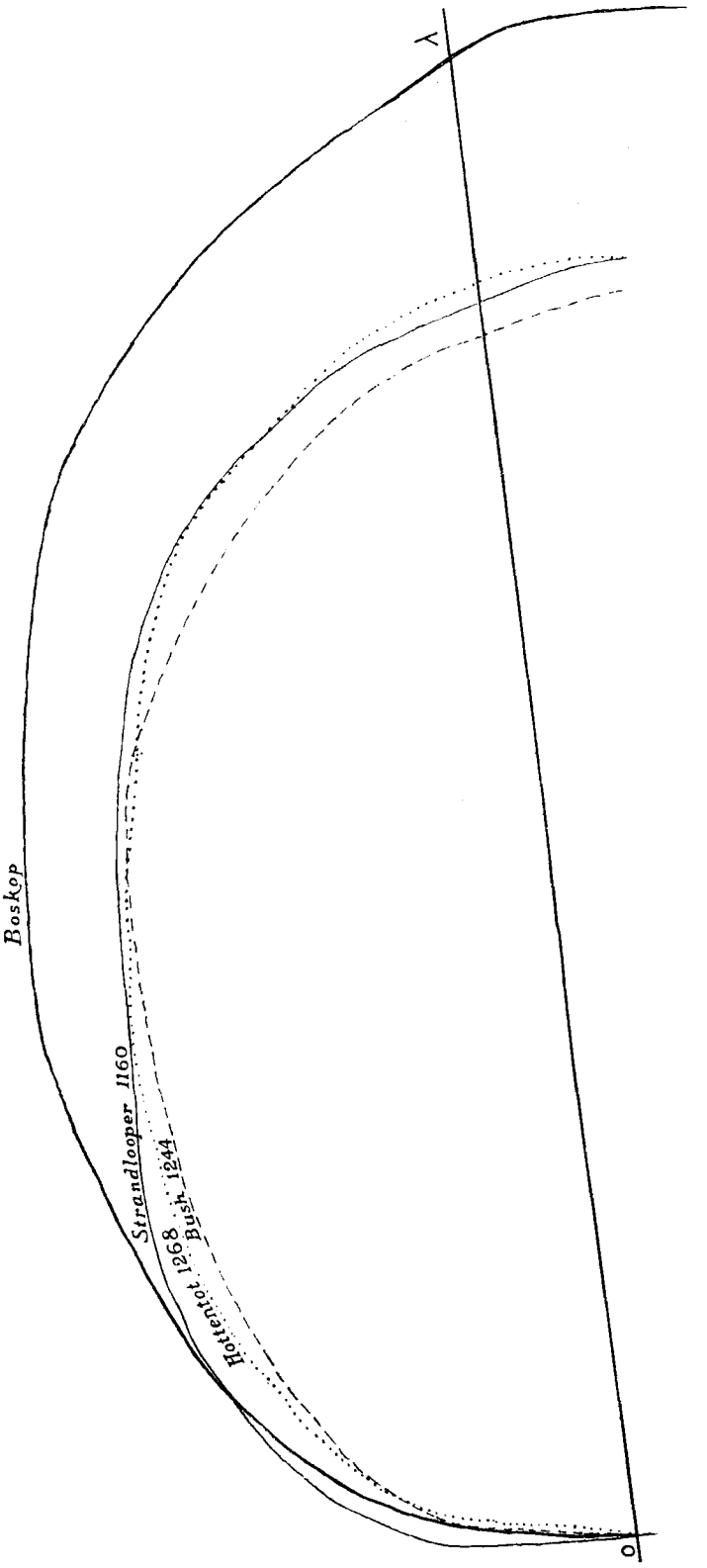

Adlard & West Newman.




*Adlard & West Newman.*




Adlard & West Newman.




*Adlard & West Newman.*

FIG. 2.—Cross sections of the shafts of the radius and ulna at level of the insertion of the pronator teres muscle.

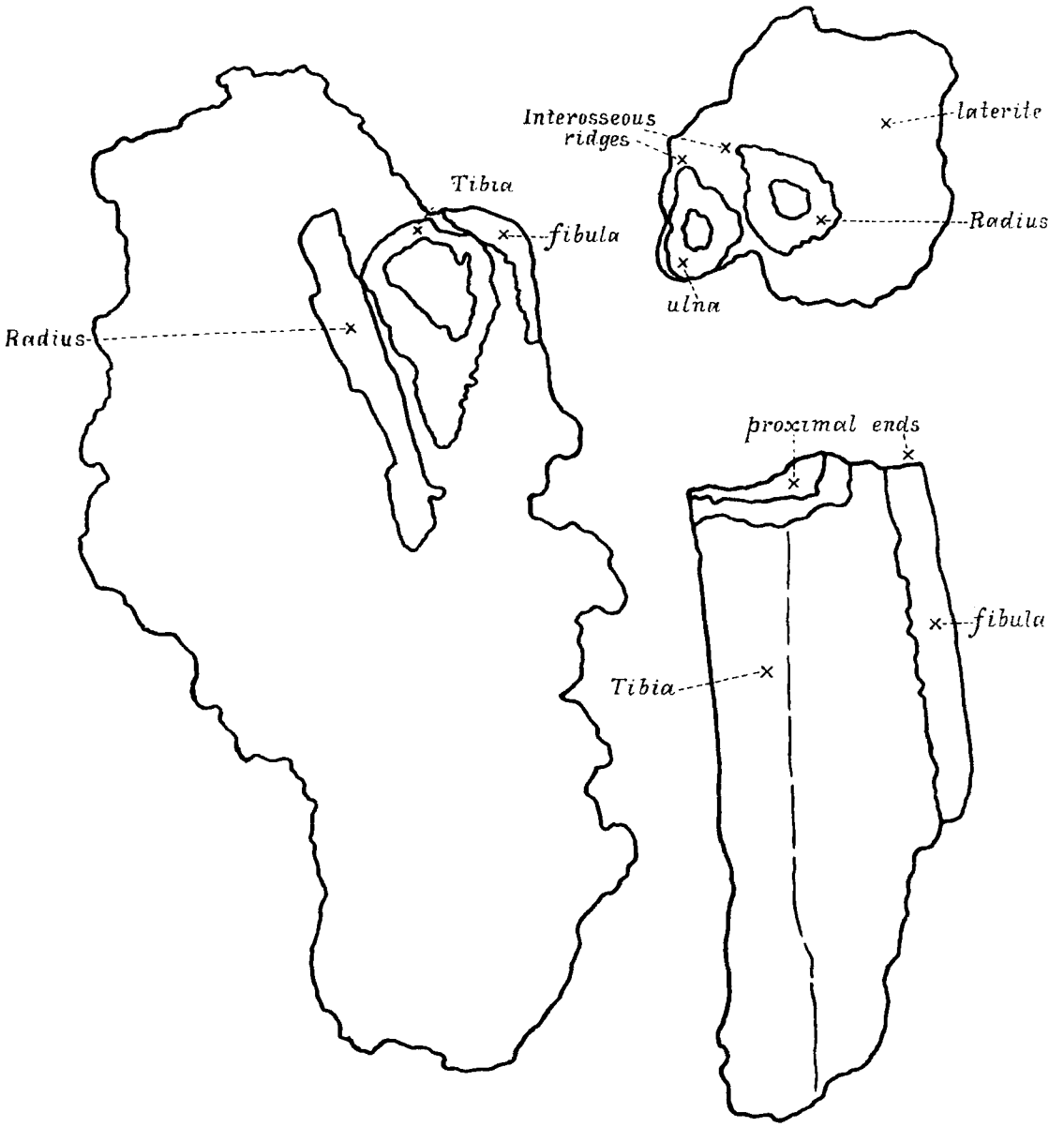



FIG. 1.—Portions of tibia, fibula, radius, and ulna in mass of laterite. The part of the ulna is not yet exposed.

FIG. 3.—Portions of tibia and fibula, anterior aspect.

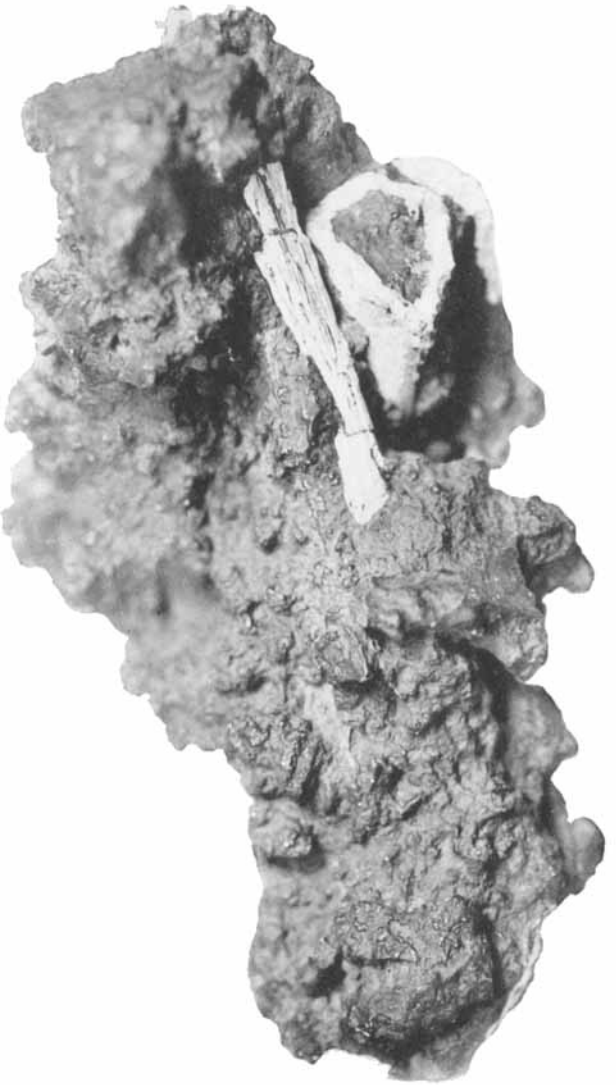


Fig. 1.

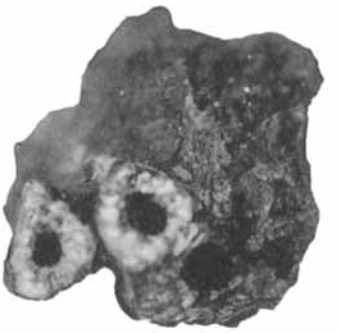


Fig. 2.

Fig. 3.

*Adlard & West Newman.*

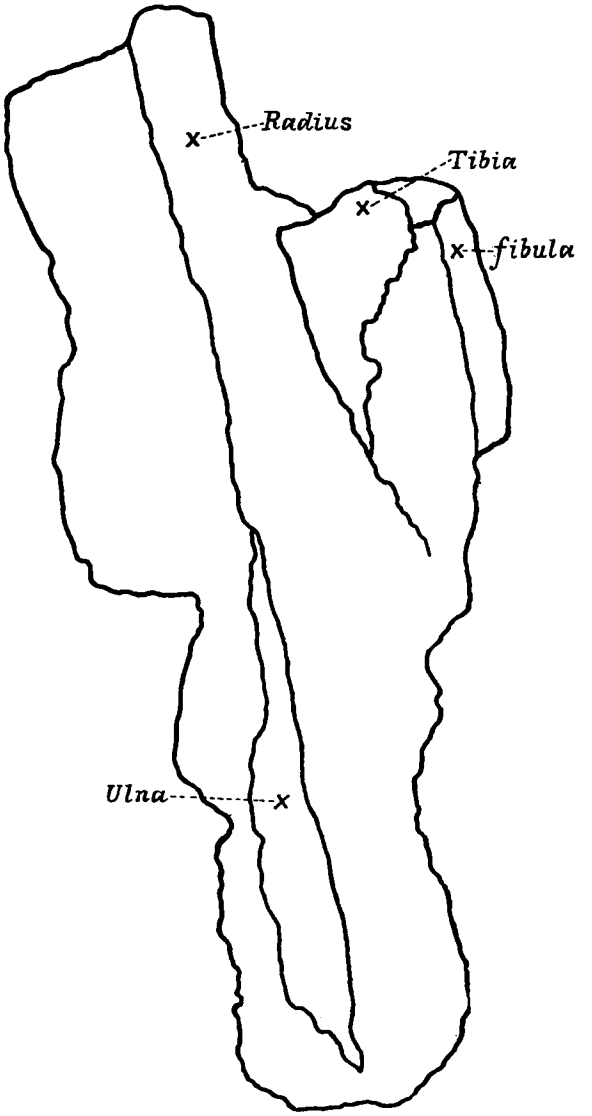



FIG. 4.—Large part of laterite removed, exposing the portions of the tibia, fibula, ulna, and radius.

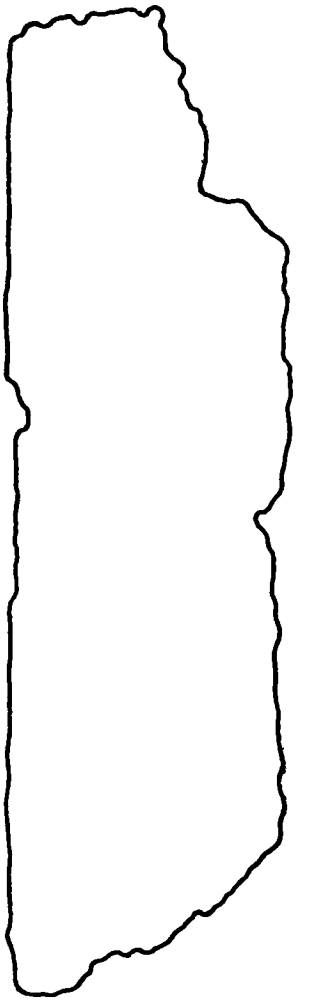


FIG. 5.—Portion of femur from proximal three-fourths of shaft; anterior aspect.

Fig. 4.

Fig. 5.

*Adlard & West Newman.*

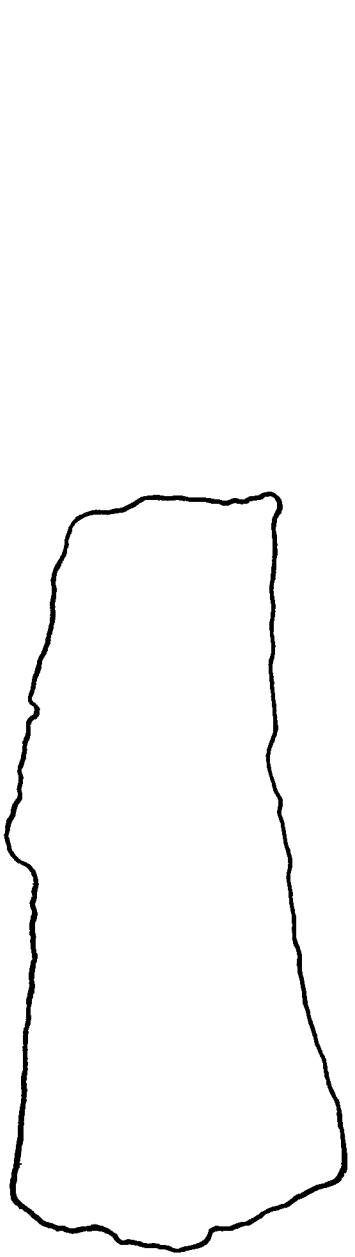


Fig. 7.—Portion of right femur from distal part of shaft, anterior aspect.

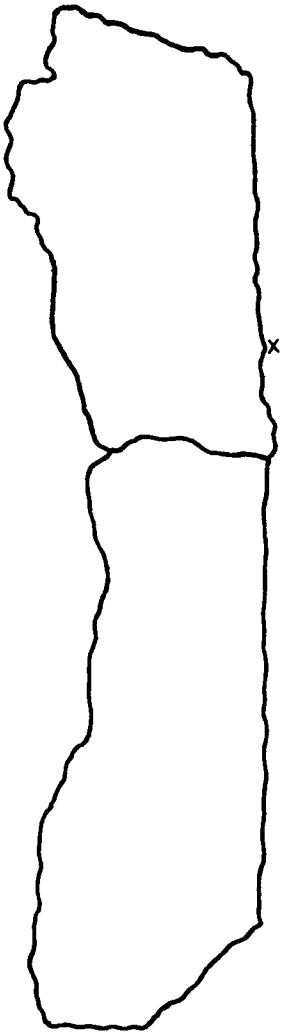



Fig. 6.—Portion of femur as in Fig. 5. Side aspect to show curvature of shaft.

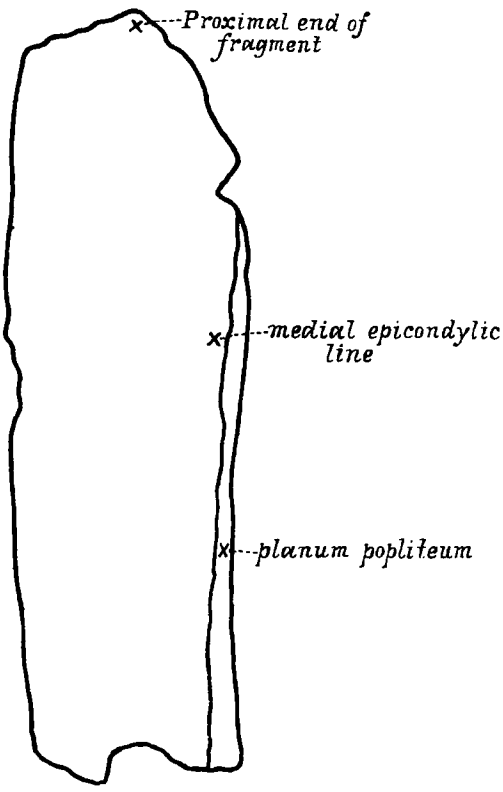



Fig. 8.—Portion of femur as in Fig. 7, medial aspect, showing fulness of planum popliteum.

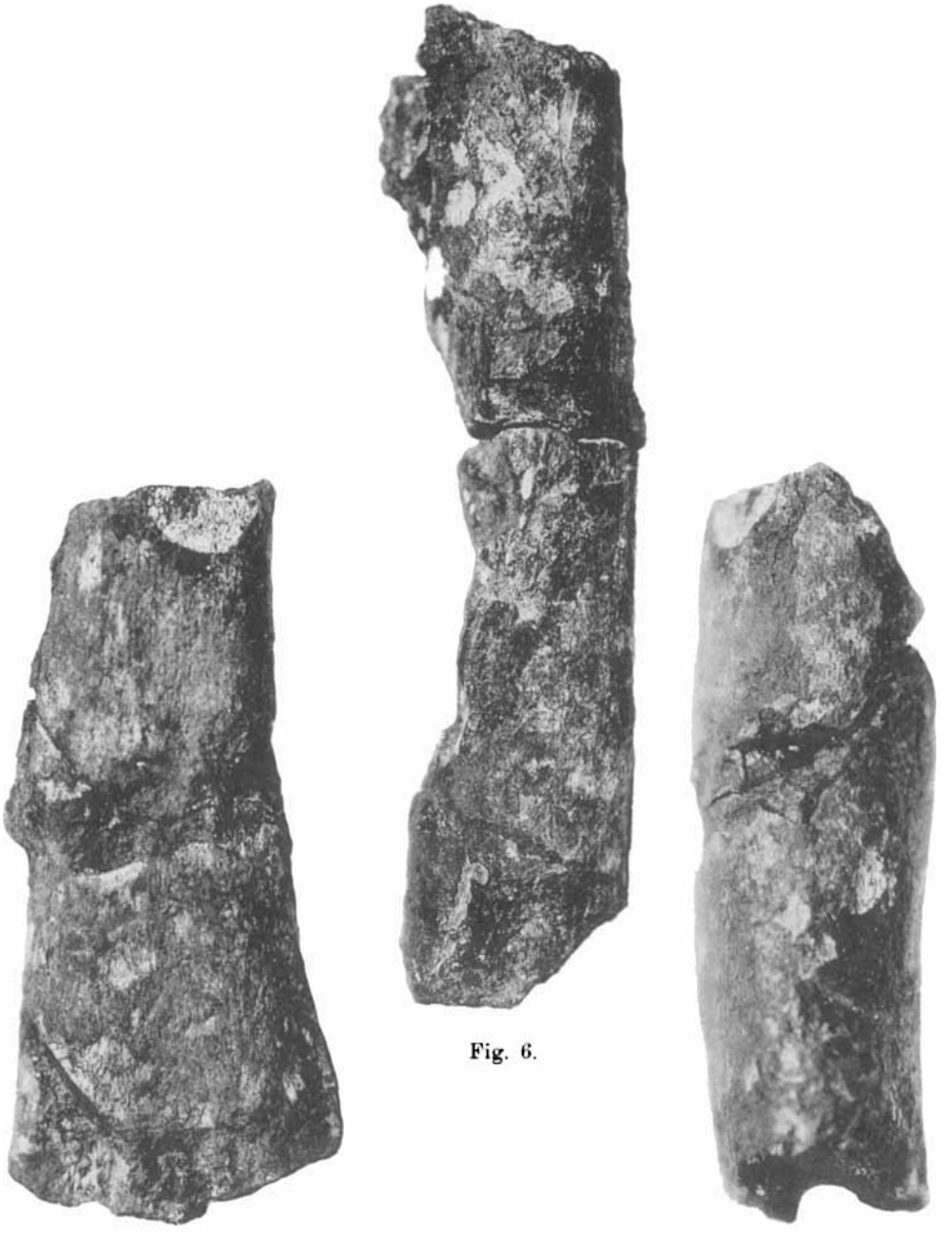


Fig. 6.

Fig. 7.

Fig. 8.

*Adlard & West Newman.*